WE CLAIM:

1. Apparatus for measuring the efficiency of transport of modem relay packets over a packet network, comprising:

5   means for connecting to a first gateway of said modem relay connection;

means for connecting to a second gateway of said modem relay connection;

a computing device connected to each of said first and

10   second connecting means, and

for running at least one terminal program for at least one of said gateways;

for providing a reference modem data stream at a known throughput rate to at least one of said gateways; and

15   for receiving a transported modem data stream from a second one of said gateways after said reference modem data stream has passed through said gateways and said packet network;

means for determining the transport efficiency of said

20   packet network by comparison of said known throughput rate of said reference modem data stream to said determined throughput rate of said received modem data stream.

2. The apparatus of claim 1, wherein:

25   said terminal program runs a Z-modem protocol for generating said modem data stream at a known throughput rate.

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3. The apparatus of claim 1, wherein said computing device:

runs a terminal program for each of said gateways;

provides a reference modem data stream at a known throughput

rate to each of said gateways;

receives a transported modem data stream from each of said

gateways after said reference modem data stream has passed

through said gateways and said packet network; and

determines the transport efficiency of said packet network

by comparison of said known throughput rate of said reference

modem data stream to said determined throughput rate of said

received modem data stream.

4. The apparatus of claim 1, wherein said throughput

efficiency is measured after said gateways have negotiated

appropriate protocols and have established a steady-state

connection over said packet network.

5. The apparatus of claim 1, wherein said modem relay

connection is established across a network.

6. The apparatus of claim 1, wherein said modem relay

connection is established across a network simulator.

7. The apparatus of claim 6, further comprising:

means for control of network transport parameters of said

network simulator.

8. The apparatus of claim 7, wherein said controlled parameters include packet loss and packet delay.

9. The apparatus of claim 8, wherein said parameters can be
5   varied to selectively simulate uniform distribution of packet loss and random distribution of packet loss.

10. The apparatus of claim 7, further comprising:
means for providing alternative packet protocol algorithms
10   to at least one of said gateways and measuring comparative throughput efficiency while maintaining fixed network conditions to provide a common evaluation reference.

11. The apparatus of claim 1, wherein:
said determination of said transport efficiency includes at
15   least two iterative repetitions of said provision of said reference modem data stream and said reception of said transported modem data stream and said comparison of said known throughput rate of said reference modem data stream to said
20   determined throughput rate of said received modem data stream; and
wherein said determination is based upon the average efficiency determined after a series of said iterations.

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12. Method for measuring the efficiency of transport of modem relay packets over a packet network, comprising the steps of:

providing a reference modem data stream at a known
5 throughput rate to a first one of said gateways of said modem relay connection and

receiving a transported modem data stream from a second one of said gateways after said reference modem data stream has passed through said gateways and said packet network;

10 comparing said known throughput rate of said reference modem data stream to said determined throughput rate of said received modem data stream to determine said network transport efficiency.

13. The method of claim 14, further comprising the steps
15 of:

collecting a group of data representative of the network throughput efficiency under a number of network conditions and corresponding to a plurality of known file transfer protocols;

determining the network throughput efficiency values
20 corresponding to a plurality of file transfer protocols and determining the average rate for a given protocol with given network conditions;

generating a representation indicative of the relationship between modem relay system design and packet transport efficiency
25 across said network.

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